



Calcareous dinoflagellate cysts in South and equatorial Atlantic surface sediments: diversity, distribution, ecology and potential for palaeoenvironmental reconstruction

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Several marine, peridiniophycidean dinoflagellate species produce calcareous cysts during their life cycle, which are relatively resistant to chemical and physical degradation and are therefore often found in large quantities in oceanic bottom sediments. Although the use of these calcareous cysts as proxies for Late Quaternary palaeoenvironmental and -climatic reconstructions has seen many advances over the last decade, only relatively patchy and regional information was, until now, available on their recent distribution patterns and ecology, especially at the species level. In this paper, comprehensive calcareous cyst diversity and distribution data have been compiled from published and unpublished work for 167 South and equatorial Atlantic Ocean surface sediments, ranging from 20°N to 50°S and 30°E to 65°W. The main aim has been to focus on the complex, often non-linear relationships between individual species' distributions and the physicochemical and trophic conditions of the overlying (sub)surface waters, through the use of $x - y$ graphs of cyst abundance vs. (sub)surface water environmental parameters, and detrended correspondence analyses. The sensitive reactions of various species to unique combinations of environmental parameters (e.g. SST, productivity, stratification) shows that each species has its own specific ecological traits, thus rejecting the frequent and bundled use of "calcareous cyst accumulation" as a general proxy for oligotrophy or stratification in future palaeoenvironmental analyses. The acquired 'reference' data set of this study is large and diverse enough to allow its future application in quantitative palaeoenvironmen-

tal reconstruction models, and shows that there is still an enormous reconstruction potential concealed in many fossil calcareous dinoflagellate cyst assemblages.